

Date: July 6, 2011

To: Amy Wolff, Durham City County Planning Department
From: Bill Judge PE, City of Durham Department of Transportation
Subject: Wilco-Hess (Z1100015) Traffic Impact Analysis

The Unified Development Ordinance (UDO) requires that a Traffic Impact Analysis (TIA) be prepared for proposed developments estimated to generate 150 or more peak hour vehicle trips. The proposed development, Wilco-Hess, is a proposed convenience market with 16 fueling positions that is expected to generate 266 a.m. peak hour trips (133 entering and 133 exiting) and 306 p.m. peak hour trips (153 entering and 153 exiting). The proposed facility is located on the west side of NC 55 north of Sedwick Road. The expected completion year is 2012, and the TIA analysis year is 2013. The Wilco-Hess TIA was prepared by Ramey Kemp & Associates in April 2011.

Study Area

The study area includes the following intersection:

- NC 55 and Site Access (unsignalized).

Trip Generation

Trip generation numbers are based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 8th Edition, 2008. The TIA included the following trip reductions:

- 63% of the AM peak hour site trips will be pass-by trips from the adjacent roadways; and
- 66% of the PM peak hour site trips will be pass-by trips from the adjacent roadways.

The TIA trip generation estimate is shown in the table below:

ITE Land Use (Code)	Size	AM Peak Hour (vph)			PM Peak Hour (vph)		
		Enter	Exit	Total	Enter	Exit	Total
C-Store With Fuel Pumps (853)	16 fuel pos.	133	133	266	153	153	306
Pass-By Trips		-84	-84	-168	-101	-101	-202
External (New) Trips		49	49	98	52	52	104

Traffic Data Collection

The peak hour intersection turning movement counts were taken from 7-9 a.m. and 4-6 p.m. on April 5, 2011.

Trip Distribution and Assignment

The assignment of site traffic on the study area roadway network was based on the following trip distribution percentages:

- To/From the North via NC 55: 50% of site trips; and
- To/From the South via NC 55: 50% of site trips.

Approved Developments and Background Growth

Approved development traffic is traffic generated by specific approved, but not yet constructed, projects within the vicinity of the subject project. In addition to the three percent (3.0%) annual growth rate for background traffic volumes, the anticipated traffic from the following approved developments were included in the TIA:

- Kitt Creek Commons: Located to the east of NC 55, across from the proposed site. The proposed development consists of 57,000 square feet retail and two 3,000 square foot outparcels for fast food restaurants; and
- Alphin Commercial: Located on the east side of NC 55 one parcel to the north of Kitt Creek Commons. The proposed development consists of 40,000 square feet of retail, a 4,500 square foot fast-food restaurant with drive-up window, and a quick lubrication vehicle shop with six service stalls.

TIP Roadway Improvements

There are no significant transportation improvement projects in the study area vicinity.

Capacity Analysis

Capacity analyses were performed using for the a.m. and p.m. peak hours for the following scenarios:

- Existing (2011) conditions;
- No-Build (2013) conditions (2011 Existing + Background growth traffic); and
- Build (2013) conditions (2011 Existing + Background growth traffic + Site traffic).

This development and project study area are located within the Suburban tier where the adopted LOS standard is LOS D. The following table summarizes the average delay for the various Levels of Service (LOS) for unsignalized and signalized intersections:

	Signalized Intersections	Unsignalized Intersections
Level of Service	Average Vehicle Delay (Seconds)	Average Vehicle Delay (Seconds)
A	0-10	0-10
B	10-20	10-15
C	20-35	15-25
D	35-55	25-35
E	55-80	35-50
F	>80	>50

NC 55 and Site Access (unsignalized)

The following table summarizes the Levels of Service at this existing unsignalized intersection:

Scenario	a.m. LOS	p.m. LOS
Build (2013)	C	D

* Unsignalized operation, with LOS reported for the worst (EB) approach

The TIA recommended the following improvements:

- Construct a southbound right-turn lane on NC 55 at the site access with adequate storage and appropriate taper; and
- Construct the site access with one ingress lane and two egress lanes.

With the construction of the TIA recommended improvements the intersection will operate at an acceptable LOS D or better for both peak hours in the Build (2013) Condition.

Summary of Required Improvements:

NC 55 and Site Access (unsignalized)

1. Construct a southbound right-turn lane on NC 55 at the site access with adequate storage and appropriate taper; and
2. Construct the site access with one ingress lane and two egress lanes.